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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/391,399	09/08/1999	HITOSHI YAMAGATA	3553-2	8545

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EXAMINER

FETZNER, TIFFANY A

ART UNIT	PAPER NUMBER
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2862

DATE MAILED: 12/13/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/391,399

Applicant(s)
Hitoshi Yamagata

Examiner
Tiffany A. Fetzner

Art Unit
2862



— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Sep 27, 2001
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirements.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 16) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 20) ☐ Other: _____

Art Unit: 2862

DETAILED Non-Final ACTION

1. The September 27th 2001 Response is considered free of new matter by the examiner.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Response to Arguments

4. Applicant's arguments filed September 27th 2001 have been fully considered but they are not persuasive, because new grounds of rejection that meets applicant's **amended claims 1-7** and **claims 8-12** which were added with the May 10th 2001 amendment, are applied in this non-final action.

Claim Rejections - 35 USC § 103

6. The rejections of **claims 1, 3-5** under **35 U.S.C. 103(a)** as being unpatentable over **Kaufman** US patent 4,829,252 issued May 9th 1989; in view of **Takekoshi et al.**, US patent 6,049,208 issued April 11th 2000 filed November 17th 1995; from the February 13th 2001 Office Action are **rescinded**.

7. The rejections of **Claims 2, 6, and 7** are rejected under **35 U.S.C. 103(a)** as being unpatentable over **Kaufman** US patent 4,829,252 issued May 9th 1989; in view of **Takekoshi et al.**, US patent 6,049,208 issued April 11th 2000 filed November 17th 1995; in further view of **Kan et al.**, US patent 6,094,590 issued July 25th 2000 filed September 18th 1997, from the February 13th 2001 Office Action are **rescinded**.

Art Unit: 2862

8. The rejections of **Claims 1-12** rejected under **35 U.S.C. 102(e)** and **35 U.S.C. 102(a)** as anticipated by **Wilk** US patent 5,899, 857 issued May 4th 1999 filed January 7th 1997; or, in the alternative, under **35 U.S.C. 103(a)** as obvious over **Wilk** US patent 5,899, 857 issued May 4th 1999 in view of **Acker et al.**, US patent 6,128,522 issued October 3rd 2000 and filed May 22nd 1998; from the June 27th 2001 Office Action are **rescinded**.
9. The following is a quotation of **35 U.S.C. 103(a)** which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Art Unit: 2862

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

12. **Claims 1-4, and 6-10** are rejected under **35 U.S.C. 102(e)** and **35 U.S.C. 102(a)** as anticipated by **Meaney et al.**, US patent 924,987 issued July 20th 1999 filed October 6th 1997; or, in the alternative, under **35 U.S.C. 103(a)** as obvious over **Meaney et al.**, US patent 924,987 issued July 20th 1999 filed October 6th 1997; in view of **Kaufman** US patent 4,829,252 issued May 9th 1989;

13. With respect to (Amended) **Claim 1**, **Meaney et al.**, teaches “a patient couch, (i.e. platform 16 in Figure 1) which enables movement of the patient” [See col. 7 lines 50-65, Figures 6, 7 and col. Col. 23 line 3 through col. 24 line 67]; **Meaney et al.**, teaches “a position information establishing apparatus which provides 3-dimensional position information of the region of interest of the patient” [See col. 25 line 1 through col. 26 line 26; col. 29 lines 56-61 and col. 32 lines 55-63, which teach 3-dimensionality specifically and Figures 3, 6, 7]; **Meaney et al.**, also teaches and a patient couch controller (i.e. platform controller 76 Figures 6, 7) for moving the patient couch, based on the provided position information” [See Col. 23 line 3 through col.26 line 26, and the entire reference in general] “so that the region of interest is re-positioned in 3-dimensions (i.e. [See col. 4 lines 20-23, col. 32 lines 55-63]). The examiner notes that **Meaney et al.**, teaches and suggests that all of the images obtained, substantially throughout the entire reference include data which is representative of a center of k-space.

14. K-space is a term in the art which relates to the raw data matrix of frequency, phase, and slice encoded imaging data, in an MR system. The field of view or “region-of-interest” defines the

Art Unit: 2862

area over which a k-space matrix is constructed during imaging. Conventionally, the strongest imaging signals are known to occur at the center of k-space, (i.e. locations where generated and applied magnetic fields coherently interfere with one another). In every MRI system there is inherently a magnetic isocenter for the entire MRI magnet system, and a region of magnetic uniformity for each additional gradient coil, local coil, or surface coil, that makes up part of the imaging system. In the MRI art it is well known to position the anatomy of the patient either at the magnetic isocenter of the entire MRI magnet system, or at the magnetic center of at least one local, gradient, or surface coils, because the strongest MR signals are generated from locations where the magnetic fields constructively interfere, and strong signals are highly desirable for the reconstruction of MR images. The examiner is interpreting the words "image data which is representative of a center of k-space" as including any data which occurs at any magnetically constructively interfering location. Therefore, the **Meaney et al.**, reference teaches and suggests that, the locations at which a patient is repositioned in three-dimensions may comprise locations that are "substantially either at the center of the static magnetic field or at the center of the gradient magnetic field." [See also Col. 23 line 3 through col.26 line 26, where repositioning may occur at any of an infinite number of locations or at discrete locations, and the entire reference in general]

15. The **Meaney et al.**, reference teaches and suggests, using a magnetic resonance imaging system with an imaging coil. [See col. 4 lines 6-7] This teaching is important because it directly suggests using the invention with an NMR or MRI apparatus, and conventionally NMR / MRI apparatuses inherently include: "a static magnetic field generator for generating a static field; a

Art Unit: 2862

gradient magnetic field generator for generating a gradient magnetic field that is superimposed on the static magnetic field; a radio-frequency magnetic field pulse transmitting/receiving unit, which applies a radio frequency pulse to a region of interest of a patient that is located within the static magnetic field, and which also receives a magnetic resonance signal that is generated from the patient;" Each of these features is considered inherent to the **Meaney et al.**, reference because an NMR / MRI scanning apparatus must inherently possess these features.

16. Additionally, **Kaufman teaches** "A magnetic resonance imaging apparatus comprising: **a static magnetic field generator** for generating a static field" [See Fig. 4 magnetic field producing assemblies 100, and permanent magnets 102; text col. 2 lines 51-64, col. 3 lines 54-60, col. 4 lines 3-29] "**a gradient magnetic field generator** for generating a gradient magnetic field that is superimposed on the static magnetic field" [See col. 1 lines 13-23 which teaches/suggests that gradients are controlled and superimposed on the static magnetic field; col. 2 lines 55-59; col. 4 lines 21-29; where gradient coils which generate gradient magnetic fields are taught.] "**a radio-frequency magnetic field pulse transmitting/receiving unit**, which applies a radio-frequency pulse to a region of interest of a patient that is located within the static magnetic field, and which also receives a magnetic resonance signal that is generated from the patient" [See col. 1 lines 24-29 col. 4 lines 25-29; RF coil structures 600, 601]; **Kaufman** also teaches "**a patient couch**, (i.e. a suitable transport structure 500; shown in Figure 6, and Figure 8) which enables movement of the patient". It would have been obvious to one of ordinary skill in the art, at the time that the invention was made that the references of **Meaney et al.**, and **Kaufman** can

Art Unit: 2862

be combined because both apparatuses concern magnetic resonance imaging devices, where a patient is transported into the apparatus.

17. With respect to (Amended) **Claim 2**, **Meaney et al.**, teaches “the position information establishing apparatus accepts input position information based on an image of the patient that is obtained from the magnetic resonance signal.” [See col. 24 line 55 through col. 26 line 26.] The same reasons for rejection, obviousness, and motivation to combine that apply to **claim 1** also apply to **claim 2**.

18. With respect to (Amended) **Claim 3**, **Meaney et al.**, teaches “the position information establishing apparatus comprises a position detection apparatus that detects the position of the region of interest.” [See col. 23 line 3 through col. 26 line 26, Figures 6, 7 the platform location detection unit 78.] The same reasons for rejection, obviousness, and motivation to combine that apply to **claim 1** also apply to **claim 3**.

19. With respect to (Amended) **Claim 4**, **Meaney et al.**, teaches “the patient couch controller” (i.e. platform controller 76) “performs an initial approximate positioning of the patient couch, based on a signal from the position detection apparatus.” [See col. 5 lines 45-67; col. 23 line 3 through col. 26 line 26] The same reasons for rejection, obviousness, and motivation to combine that apply to **claims 1**, and **3** also apply to **claim 4**.

20. With respect to (Amended) **Claim 6**, **Meaney et al.**, teaches, suggests and shows “A method for performing magnetic resonance imaging diagnosis, said method comprising: placing the patient onto a patient couch that is disposed within a static magnetic field and a gradient magnetic field”; [See Figure 1, 2a, 2b, 2c; that the imaging apparatus is an MRI apparatus is

Art Unit: 2862

taught throughout the reference; the presence of a static magnetic field and a gradient magnetic field, is considered inherent to all MR imaging systems due to necessity.] **Meaney et al.**, teaches, and suggests “moving the patient couch based on a signal from a position detector so that a region of interest of the patient approximately coincides with the center of k-space” (i.e. the examiner considers the center of k-space to suggest either the static magnetic field or the center of the gradient magnetic field;” [See col. 4 lines 10-30, col. 8 lines 2-47, and the entire reference in general]

21. **Meaney et al.**, teaches, and suggests “applying a radio-frequency pulse (i.e. any type of electromagnetic energy) to the region of interest of the patient, and receiving a signal (i.e. broadly considered a magnetic resonance signal) that is generated from the patient;” [See col. 11 lines 41-61] “reconstructing a plurality of images of the patient,) based on the signal received” [See col. 5 lines 65-67, and the entire reference in general.] **Meaney et al.**, teaches, and suggests “selecting an image that includes the region of interest from the plurality of images of the patient [See col. 8 line 54 through col. 9 line 25, col. 32 lines 55-63 where the region of interest is the abdomen and pelvis]; and moving the patient couch, based on the selected image, so that the region of interest of the patient substantially coincides in 3-dimensions with the center of kspace. (The examiner interprets the center of k-space as suggesting the center of the static magnetic field or the center of the gradient magnetic field.”) [See col. 32 lines 55-63; col. 29 line 53 through col. 32 line 63 in general; and the rejection reasons given for the rejection of **claim 1**.] The same reasons for rejection, obviousness, and motivation to combine that apply to **claim 1** also apply to **claim 6**.

Art Unit: 2862

22. With respect to (Amended) **Claim 7**, **Meaney et al.**, teaches, and suggests “designating the region of interest within the selected image.” [See col. 8 lines 4-65, where the region of interest may be a part of the arterial system, suspected of disease or injury, in a given image; and the entire reference in general.] The same reasons for rejection, obviousness, and motivation to combine that apply to **claim 6** also apply to **claim 7**.

23. With respect to **Claim 8**, **Meaney et al.**, teaches, “A method for performing magnetic resonance imaging diagnosis, said method comprising: placing the patient onto a patient couch (i.e. platform 16) that is disposed within a static magnetic field and a gradient magnetic field”; [See Figure 1, 2a, 2b, 2c; The examiner considers the imaging apparatus to be an MRI apparatus as suggested throughout the reference. The presence of a static magnetic field and a gradient magnetic field, is considered inherent to all MR imaging systems due to necessity. See the rejection of **claim 1**] **Meaney et al.**, also teaches, designating a 3-dimensional position of a region of interest of the patient; [See col. 29 line 53 through col. 32 line 63 in general], and moving the patient couch, so that the region of interest of the patient substantially coincides 3-dimensionally with the center of k-space. (The examiner interprets the center of k-space as suggesting the center of the static magnetic field or the center of the gradient magnetic field.”) [See col. 32 lines 55-63; col. 29 line 53 through col. 32 line 63 in general; and the rejection reasons given for the rejection of **claim 1**.] The same reasons for rejection, obviousness, and motivation to combine that apply to **claims 1, 6** also apply to **claim 8**.

24. With respect to **Claim 9**, this claim just restates the additional limitations of **claims 6** and **7** which have already been addressed in this action. **Meaney et al.**, teaches the limitations of claim

Art Unit: 2862

9, for the same reasons already given in the rejections of **claims 1, 6, and 7** which need not be reiterated. Therefore, The same reasons for rejection, obviousness, and motivation to combine that apply to **claims 1, 6, 7, 8** also apply to **claim 9**.

25. With respect to **Claim 10, Meaney et al.**, teaches and suggests “obtaining positional information from a position sensor (i.e. detection unit 78) representing a 3 dimensional position for the region of interest.” [See col. 25 lines 1-11, col. 29 lines 57-61, col. 32 lines 55-63] The same reasons for rejection, obviousness, and motivation to combine that apply to **claims 1, 8, 9** also apply to **claim 10**.

26. **Claim 5** is rejected under **35 U.S.C. 102(e)** and **35 U.S.C. 102(a)** as anticipated by **Meaney et al.**, US patent 924,987 issued July 20th 1999 filed October 6th 1997; or, in the alternative, under **35 U.S.C. 103(a)** as obvious over **Meaney et al.**, US patent 924,987 issued July 20th 1999 filed October 6th 1997; in view of **Kaufman** US patent 4,829,252 issued May 9th 1989; and in further view of **Takekoshi et al.**, US patent 6,049,208 issued April 11th 2000 filed November 17th 1995;

27. With respect to (Amended) **Claim 5, Meaney et al.**, teaches “the patient couch (i.e. platform controller 76) is capable of moving the patient horizontally. [See col. 5 lines 16-21 and the entire reference in general. **Meaney et al.**, lacks explicitly teaching that “the patient couch (i.e. platform controller 76) is capable of moving the patient vertically”, however, **Takekoshi et al.**, teaches this limitation. [See col. 5 line 25 through col. 6 line 9; col. 6 line 31 through col. 8 line 24; Figure 4, specifically, components L1, L2, L3 in relation to the teaching of the text and that the patient bed can “UP” or “DOWN” (i.e. col. 7 lines 48-67) as well as into and out of the

Art Unit: 2862

magnet. (I.e. col. 3 lines 6-33)] The **Takekoshi et al.**, **Kaufman** and **Meaney et al.**, reference can be combined because all three references are MR reference that position a patient, on a patient bed in an MR imaging system and are concerned with where the patient is located. The same reasons for rejection, obviousness, and motivation to combine that apply to **claim 1** also apply to **claim 5**.

28. **Claims 11 and 12** are rejected under **35 U.S.C. 102(e)** and **35 U.S.C. 102(a)** as anticipated by **Meaney et al.**, US patent 924,987 issued July 20th 1999 filed October 6th 1997; or, in the alternative, under **35 U.S.C. 103(a)** as obvious over **Meaney et al.**, US patent 924,987 issued July 20th 1999 filed October 6th 1997; in view of **Kaufman** US patent 4,829,252 issued May 9th 1989; and in further view of **Acker et al.**, US patent 6,128,522 issued October 3rd 2000 and filed May 22nd 1998;

29. With respect to **Claim 11**, **Meaney et al.**, teaches and suggests "A method for three-dimensionally positioning a patient region of interest substantially at an optimum MR imaging position (i.e. the center of k-space) within an MRI system" [See the entire reference in general.]

30. **Meaney et al.**, teaches and suggests said method comprising: positioning a patient region of interest at a first position within an MRI field of view; [See col. 4 lines 11-67 Figures 2a, 2b, 2c] "generating images (i.e. interpreted as MR images) of the patient in three dimensions while located at said first position;" [See abstract, the entire reference in general] "locating and designating the patient region of interest position within said images" [See abstract where different images are used to image different areas of patient anatomy. See also the rejection of

Art Unit: 2862

claim 6, earlier in this action. **Acker et al.**, also teaches these limitations [See Figure 1, col. 16 lines 19-21, col. 16 line 22 through col. 17 line 17]

31. Meaney et al., also suggests “generating 3-dimensional position difference data between the designated position of the patient region of interest in the images and an optimum MR imaging position; and re-positioning the patient region of interest in 3-dimensions from said first, now designated, position to an optimum MR imaging position using said position difference data.” [See the teachings of the entire reference in general, and especially col. 23 line 3 through col. 26 line 6, where numerous positioning schemes are taught, col. 8 line 66 through col. 9 line 35 which suggests overlapping images helps to compensate for inhomogeneities and optimize the images obtained; and the three-dimensional teachings of col. 29 lines 53-61] **Acker et al.**, also teaches this limitation [See col. 17 lines 28-53, col. 18 lines 59-64, col. 20 lines 12-37, col. 21 lines 49-54, col. 21 line 67 through col. 22 line 50, and col. 16 line 19 through col. 17 line 17; Center point 22 of imaging volume 20 is illustrated in Figure 3.]

32. It would have been obvious to one of ordinary skill in the art, at the time that the invention was made that the **Acker et al.**, reference can be combined with the **Meaney et al.** reference because **Acker et al.**, specifically discloses an MRI imaging apparatus that includes a patient on bed 24, a positioning system 23; and a means to obtain and utilize three-dimensional data. [See col. 16 lines 19-58 specifically lines 19-21.] Therefore, both references teach and suggest the locating and identifying patient positional image data in a magnetic resonance system. The **Acker et al.**, **Kaufman** and **Meaney et al.**, reference can be combined because all three references are MR references that position a patient, on a patient bed in an MR imaging system and are

Art Unit: 2862

concerned with where the patient is located. The same reasons for rejection, obviousness, and motivation to combine that apply to **claims 1, 6, 8**, also apply to **claim 11**.

33. With respect to **Claim 12, Meaney et al.**, teaches "position data provided by a position sensor that automatically senses a relative spatial position between a movable patient and a fixed MRI system." [See col. 25 lines 1-11 and detection unit 78.] The same reasons for rejection, obviousness, and motivation to combine that apply to **claims 1, 6, 8, 11**, also apply to **claim 12**.

34. Prior Art made of Record

35. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A) US patent 6,112,110 issued to **Wilk**, August 29th 2000 and filed February 12th 1999. The examiner notes that **Wilk 6,112,110** is a divisional to the **Wilk 5,899,857** applied in this office action and that the disclosure is substantially identical although the claims are different. Therefore, under **35 USC 102 (e)** the **Wilk 6,112,110** is applicable to all the claims, because it teaches the same features.

B) US patent 4,968,937 issued to **Akgun** November 6th 1990.

C) US patent 5,735,278 issued to **Hoult et al.**, April 7th 1998 and filed March 15th 1996.

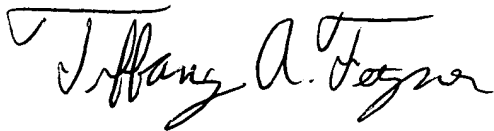
Conclusion

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is (703) 305-0430. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

Art Unit: 2862

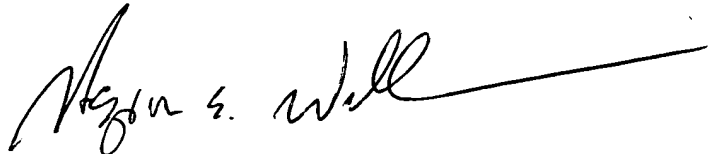
37. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams, can be reached on (703) 305-4705. The fax phone number for the organization where this application or proceeding is assigned is (703)305-3432 .

38. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0956.



TAF

December 4, 2001



HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800